

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as currently amended and in light of the following discussion, is respectfully requested.

Claims 1-4 and 7-12 are presently pending in this application, Claim 1 having been amended and Claims 8-12 having been added by the present amendment.

In the outstanding Office Action, Claims 1-4 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ichikawa et al. (U.S. Patent 5,595,581) in view of Ohno et al. (U.S. Patent 6,669,751).

Claim 1 has been amended and Claims 8-12 have been newly added herein. These amendments and additions in the claims find support in the specification, drawings and/or claims as originally filed, for example, the specification, page 30, line 2, to page 33, line 7, and no new matter is added thereby. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory claim language.

Before addressing the rejection based on the cited references, a brief review of Claim 1 as currently amended is believed to be helpful. Claim 1 is directed to a honeycomb filter for purifying exhaust gases and recites “a columnar body comprising a plurality of porous ceramic members, each of said porous ceramic members comprising silicon carbide and having a plurality of through holes extending in parallel with one another in a length direction of said columnar body and a wall portion interposed between said through holes, said wall portion being configured to collect particles in exhaust gases; and a plurality of plugs comprising silicon carbide and filling ones of said through holes at one end of said columnar body and other ones of said through holes at the other end of said columnar body, wherein said columnar body has a porosity which is in a range from 20 to 80%, said plugs have a

porosity which is 90% or less, and said porosity of said plugs is set to 0.15 to 4.0 times of said porosity of said columnar body.”

By providing such a columnar body, the honeycomb filter of Claim 1 exhibits improved thermal resistance and mechanical strength, and a thermal stress exerted during its use is dispersed among the porous ceramic members. Furthermore, the porosities of the columnar body and plugs are set within certain ranges and the difference between the thermal expansion coefficients of the columnar body and the plugs is set smaller, taking advantages attributable to the use of silicon carbide and at the same time making less susceptible to gap formation between the highly porous columnar body and plugs, which may be caused by the large thermal expansion coefficient of silicon carbide. As a result, the columnar body is significantly less susceptible to cracking caused by the thermal expansion and thermal stress due to the repetitions of a high temperature regeneration process during which the particles collected on the wall portion are burned by a heated gas.

The Office Action maintains that “[i]t would have been obvious ... to modify the teachings of Ichikawa et al with the teachings of Ohno et al. such that said columnar body has a porosity which is in a range from 20 to 80 % and said plugs have a porosity which is 90% or less to provide a honeycomb filter having small pressure loss and superior mechanical strength” Applicant respectfully traverses as follows.

First, neither Ichikawa et al. nor Ohno et al. recognizes the gap formation between the columnar body and the plugs or the cracking caused thereby. Furthermore, as discussed in the previous response, Ichikawa et al. criticizes that an apparatus which removes the collected particles by burning by means of periodically igniting the filter is ineffective and problematic,¹ and thus the Ichikawa et al. apparatus regenerates by a blow-back process in which the particles collected in the partition wall are removed by passing a blow-back air

¹ See, for example, id., column 1, lines 23-50.

through the gas flow passages in the opposite direction.² More specifically, Ichikawa et al. simply proposes that the second sealing members 22 plugging the gas flow passages at the downstream end have porosity which allows the blow-back air to easily pass through without increasing pressure loss, thereby releasing the deposited particles efficiently.³ As such, Ichikawa et al. clearly leads away from the apparatus described in Ohno et al. as Ohno et al. is directed to an apparatus which regenerates by burning the collected particles.

Also, Ohno et al. merely states that by adjusting the thermal conductance of the seal layer adhering the porous ceramic bodies, the heat conductance between the ceramic bodies, *i.e.*, filters, can be improved, thereby burning the particles more effectively and efficiently⁴ and that the porosity of its filters are set in order to improve the flow of exhaust gas and reduce the pressure loss caused by its use,⁵ thereby undesirably increasing the pressure loss if the porosity of the second sealing members 22 described in Ichikawa et al. were adopted in the Ohno et al. apparatus.

Therefore, it is respectfully submitted that the structure recited in Claim 1 is distinguishable from Ichikawa et al. and Ohno et al., and Applicant respectfully requests that the outstanding obviousness rejection based on the combination of Ichikawa et al. and Ohno et al. be withdrawn.

For the foregoing reasons, Claim 1 is believed to be allowable. Furthermore, since Claims 2-4 and 7-12 depend directly or indirectly from Claim 1, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2-4 and 7-12 are believed to be allowable as well.

² See, for example, Ichikawa et al., Figures 1A and 1B.

³ See Ichikawa et al., column 1, line 64, to column 2, line 3, and column 4, lines 33-54.

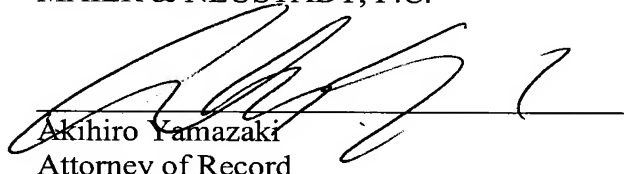
⁴ See, for example, Ohno et al., column 6, lines 12-26, column 9, lines 52-63.

⁵ See *id.*, column 2, lines 40-45, column 6, lines 1-4, and column 24, lines 50-54.

In view of the amendments and discussions presented above, Applicant respectfully submits that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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